DEPARTMENT OF PUBLIC SAFETY

COPY

FILE NO. SUPPLEMENT 00-004327

ALASKA STATE TROOPERS, A DETACHMENT, F.M.O.I. POST.

INVESTIGATED BY DFM's Jerry Gentile/Theresa A. Smith DATES INVESTIGATED June, 9-10&17, 2000

TITLE OF CASE FIRE –Other Vehicle M/V Columbia State of Alaska Ferry

SUPPLEMENTAL REPORT Written by Deputy Fire Marshal (DFM) Gentile

SUMMARY

On or about June 6, 2000, at approximately (approx.) 1205 hrs the Motor Vessel (M/V) Columbia reported an electrical fire in the engine room of the ship. On June 9, 2000, Deputy Fire Marshals (DFMs) Gentile & Smith were sent to assist the National Transportation Safety Board (NTSB) in their investigation of the fire. No injuries or deaths were reported. The cause of the fire was determined to be metal banding falling on the main electrical buss bars in electrical control panels 1 and 2, creating an electrical arch producing extreme heat.

NOTIFICATION

The morning of June 9, 2000, State Fire Marshal (SFM), Gary Powell called DFM Gentile and requested I go to the Auke Bay Ferry Terminal, (Juneau) to assist NTSB in determining the origin and cause of the fire. DFM Smith was included for the training experience.

ON-SCENE FIRE INVESTIGATION:

At approx. 1030 hours on June 9, 2000 DFMS Gentile and Smith arrived onboard the M/V Columbia and met Ms. Nancy McAtee, with NTSB. She asked us to go to the engine room electrical control room to survey the scene while she finished some crew interviews. She asked us not to disturb the scene until she was available to assist. It must be noted that from the time of the incident throughout the investigation the scene was unsecured. Access was limited but not off limits.

Smith and myself were taken to the engine room to view the scene. The scene appeared to be in pretty much intact, but you could tell that there had been some firefighter overhaul. The scene was not secured or monitored before or after our arrival. A quick evaluation of the overall scene indicated the most damage was done to panel #2 at and above the mid-level. It was not apparent where the point of origin was or any indication of a probable cause. We looked for frayed wiring that may have caused the initial arch, none was found.

When Ms. McAtee arrived we systematically photographed the control panels and the breakers that were removed during overhaul. After looking closely at the buss bars and wire cables it was determined that the cables did not cause the fire but the insulation on the cables contributed to the fuel load. The buss bars and some of the cabinet frame had been melted as if they were cut with a cutting torch. All indications were that the fire was extremely hot. Parts of the cabinet's frame were 1/8" steel and in some cases ¼" steel where the frame was double thickness as between the breakers. The

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1/8" thick metal tray, which held wires, above panel #2 had a hole burnt through it approx. 6" wide by 3' long in the center of the tray. It was apparent that panel #2 had suffered more heat for a longer period of time than panel #1.

We then systematically removed some of the breakers that were left in the panels, marking them and moving them out of the room. Each was examined to determine if it could have been the cause of the fire. They did not show indications that the breakers had failed and caused the fire. There did not appear to be any one point of origin on the panel.

After thoroughly evaluating the inside of panels #1 & #2 we had not noted anything that could have cause the fire. We then focused on the deck underneath the panels the area was photographed before starting. There was a lot of melted metal (slag) located on the deck under the panels, there was also a lot of fire extinguisher powder covering the slag and other material on the deck. Photos were taken of the wire banding (a metal strip approx. ½" wide with small slots located in the middle, similar to an automotive hose clamp w/o the tightening screw device), located on the deck under panels #1 & #2 that were visible before collecting. The panels were evaluated for areas where the metal banding may have fallen off of the cables they supported. We could not locate any areas, on the cables, that appeared to have banding that may have fallen off in order to cause the fire. Had the banding been on the cables there should have been signs of the insulation used between the banding and the cables, as in other areas where the banding was still in place. There should have been indentations in the cable insulation where the banding had been tightened even after the fire as the most of the cable insulation was in uniform condition.

We scraped the deck under panel # 2 first to see if anything had fallen down that could have caused the fire. We used the same pattern for cleaning the deck under each of the 3 panels. Each panel was approx. divided into thirds from left to right. Each third was divided approx. in half from front to back so if anything were found we could identify the area found. The deck was scraped with a tool and collected in a dustpan, by section, to remove it from under the buss bars in the panel. The dustpan was then sifted on the rubber mat located on the deck in front of the panels; to see if there was any unusual debris located under the panel. The deck under the panels appeared to contain dust, metal slag, pieces of metal banding, plastic banding, and fire extinguisher powder. During the sifting process any metal pieces that could be identified were kept separate from the debris. While processing the deck under the panels any banding, bolts, nuts, or any other object that looked like it had been arched by high voltage, was photographed, marked and placed in plastic bags. The bags were then turned over to the NTSB for their processing. All debris and slag was placed in plastic buckets so they could be used to reconstruct the scene or if further testing were necessary.

BUILDING CONSTRUCTION OF THE INVOLVED STRUCTURE:

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ALASKA STATE TROOPERS, ___A___ DETACHMENT. ___F.M.O.J.___ POST.

INVESTIGATED BY ___DFM's Jerry Gentile/Theresa A. Smith___ DATE INVESTIGATED June. 9-10&17 , 2000

TITLE OF CASE FIRE –Other Vehicle M/V Columbia State of Alaska Ferry

The M/V Columbia is a steel hull ship.

EXTERIOR EXAMINATION OF THE INVOLVED STRUCTURE:

The exterior showed no signs of damage.

INTERVIEWS:

INTERVIEW # , VI, PG, Name of Person (not recorded):

All interviews were conducted and recorded by the NTSB team. DFMs Gentile and Smith sat in on some interviews as well as talking with pertinent crew members at the fire scene. (See NTSB Report)

INTERIOR EXAMINATION OF THE INVOLVED STRUCTURE:

The area of fire was to the main electrical control panels from the ship's 3 main generators. The panels are located in the electrical control room in the main engine room.

ADDITIONAL INFORMATION:

On June 17, 2000 DFM Gentile was asked, by NTSB, to respond to Ketchikan to assist with the reconstruction of the fire scene. I met with Tom Roth-Roffy, NTSB, Don Gilesby, BATF, Edward Schaefer, Schaefer Engineering Corp., H. Bruce Land III, John Hopkins University. Mr. Land is an expert in applied physics, and Mr. Schaefer is a forensic electrical engineer. We processed the scene again looking more closely at the buss bars and signs of arching. After reconstructing the panel by identifying all breaker locations and checking the breakers it was determined that the breakers were not the cause of the fire. That the damage to the breakers was caused from the fire. Mr. Land found a bolt with signs of arching on the head and thread end on the bottom angle brace on panel 1. He thought that this bolt might have cause the initial arch by falling between two buss bars on panel 1. It must be noted that Mr. Land nor Mr. Schaefer had seen the banding or other items that were collected during our initial investigation on June 9—10th, they had been taken back to NTSB Headquarters for analysis.

FIRE ORIGIN AND CAUSE CONCLUSION:

The origin of the fire was located in panels #1 and #2 somewhere behind the breakers near the top of the breaker panels. The most probable cause was a loose piece of metal banding falling onto two buss bars causing the initial arch which started a chain reaction until both generators were shut down.

MOTIVE:

NA

MEANS:

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INVESTIGATED BY DFM's Jerry Gentile/Theresa A. Smith DATES INVESTIGATED June, 9-10&17 ,2000

TITLE OF CASE FIRE –Other Vehicle M/V Columbia State of Alaska Ferry

NA

OPPURTUNITY:

NA

OFFENSE:

NA

OPM SECTION 120.070

1. USCG and Capital City Fire and Rescue
2. See NTSB report.
3. Alaska Marine Highway System
4. a) Motor Vessel Passenger & Vehicle Ferry
   b) Transportation
   c) Ship
   d) Marine Vessel "Columbia"
5. Estimated Loss $ 1 – 2 million
6. Self Insured State of Alaska
7. SAA
8. NA
9. Main Electrical Control Panel
10. Five Foot Level
11. Electrical Buss Bars
12. Spark
13. Steel & Cooper
14. Metal & Wire Insulation
15. Loose Metal
16. a) Metal Cabinets, Breakers, Buss Bars, Wiring
    b) Control Room
    c) NA
    d) NA
17. None
18. NA

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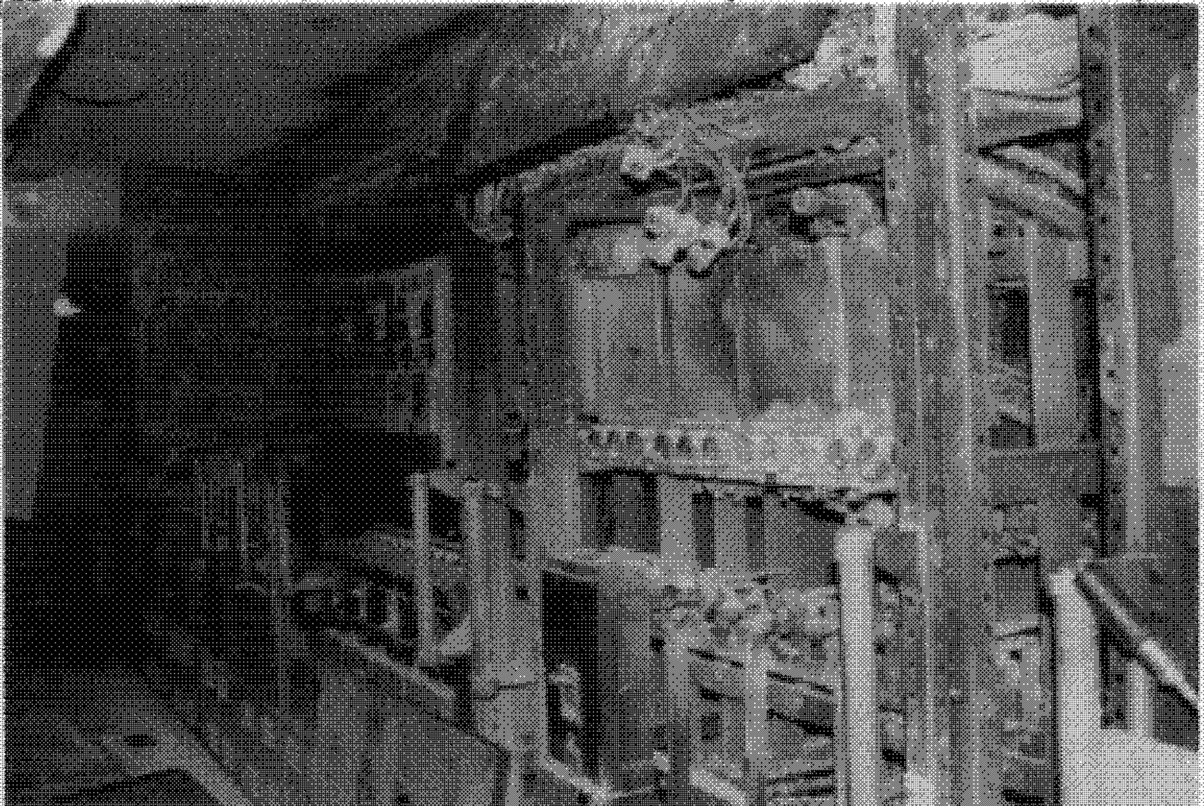
19. NA
20. NA
21. Electrical Control Room in Main Engine Room
22. NA
23. NA
24. NA
25. NA
26. NA
27. NA
28. No
29. No

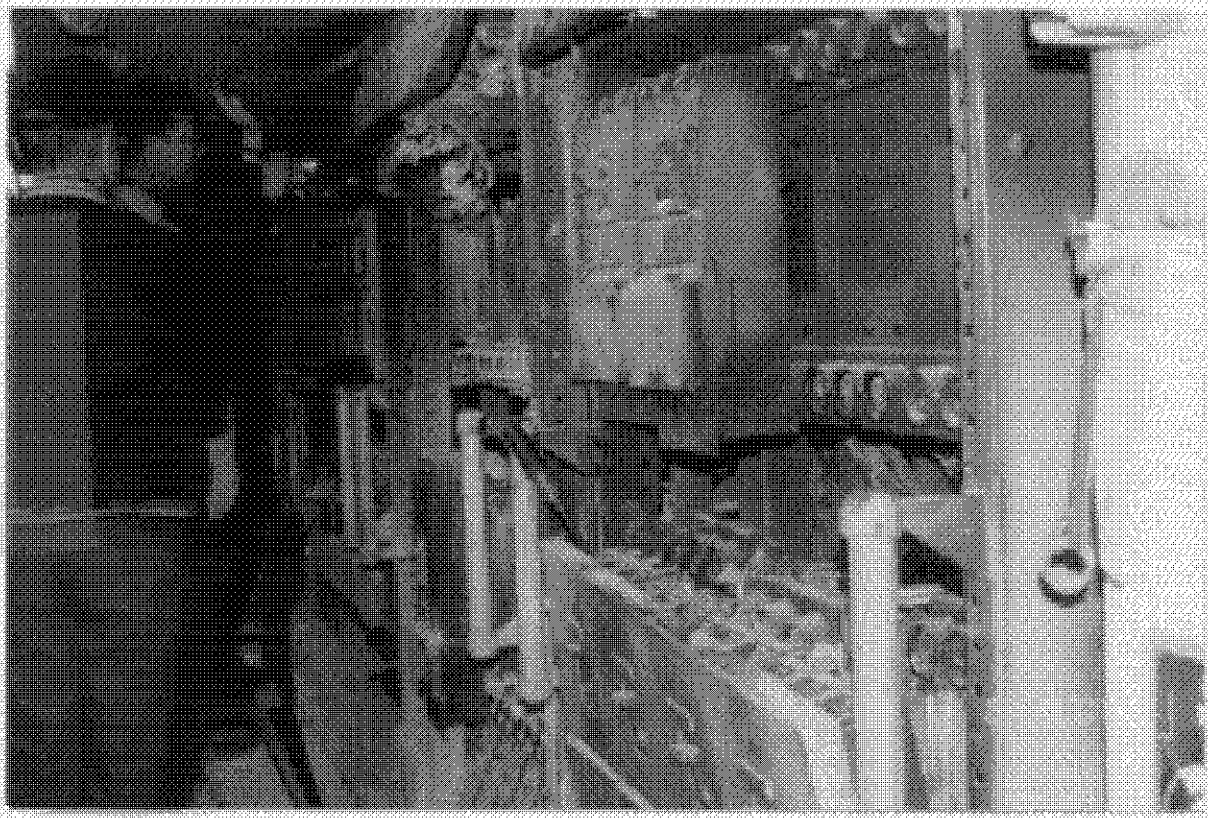
ATTACHMENT # 1

Photo Log (on file in S/E Regional Office)

This concludes this report.



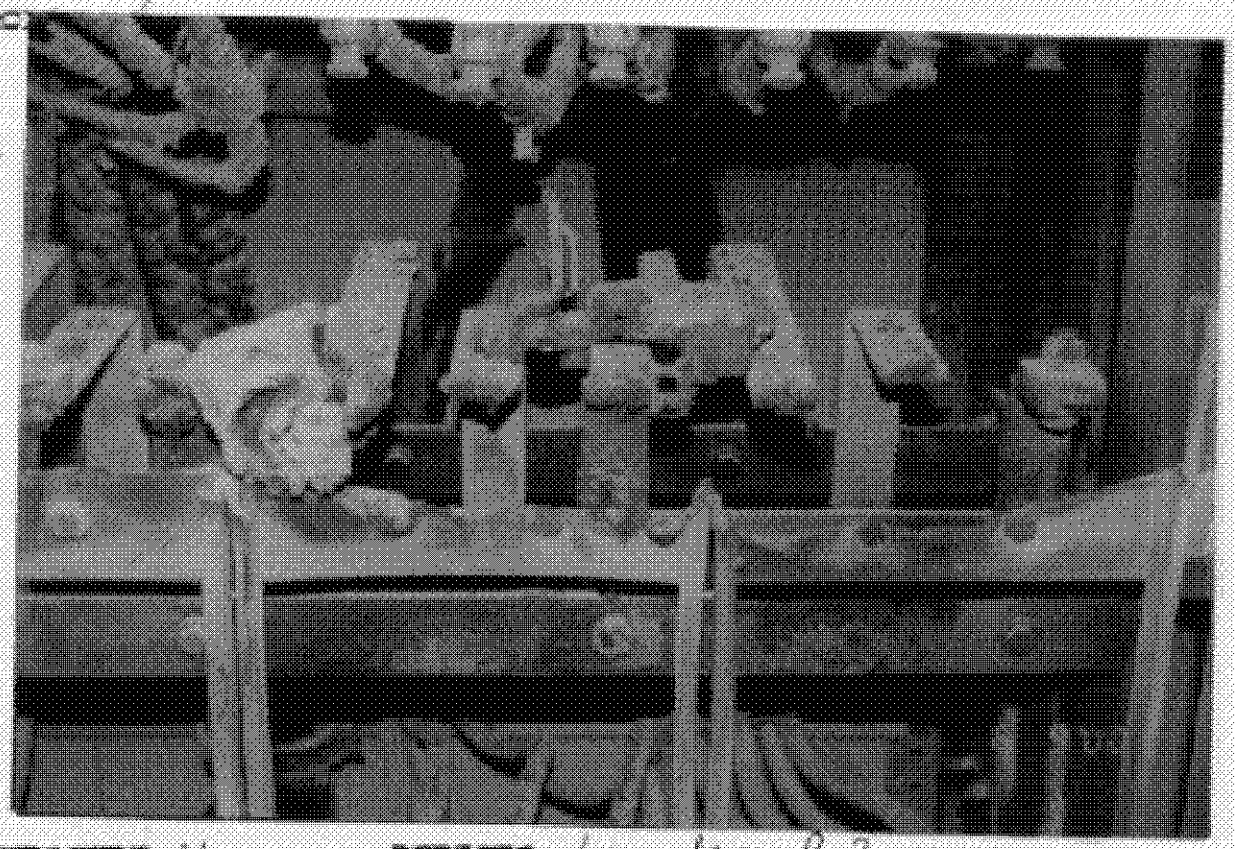
EXPOSURE 5 DEPICTS TOP View of Panels 3, 2, (1) (Partial)



EXPOSURE 9 DEPICTS P-1 + P-2 Showing most damage P-2

CASE NAME M/V Columbia CASE # 00005000

LOCATION Juneau BY JVG-1



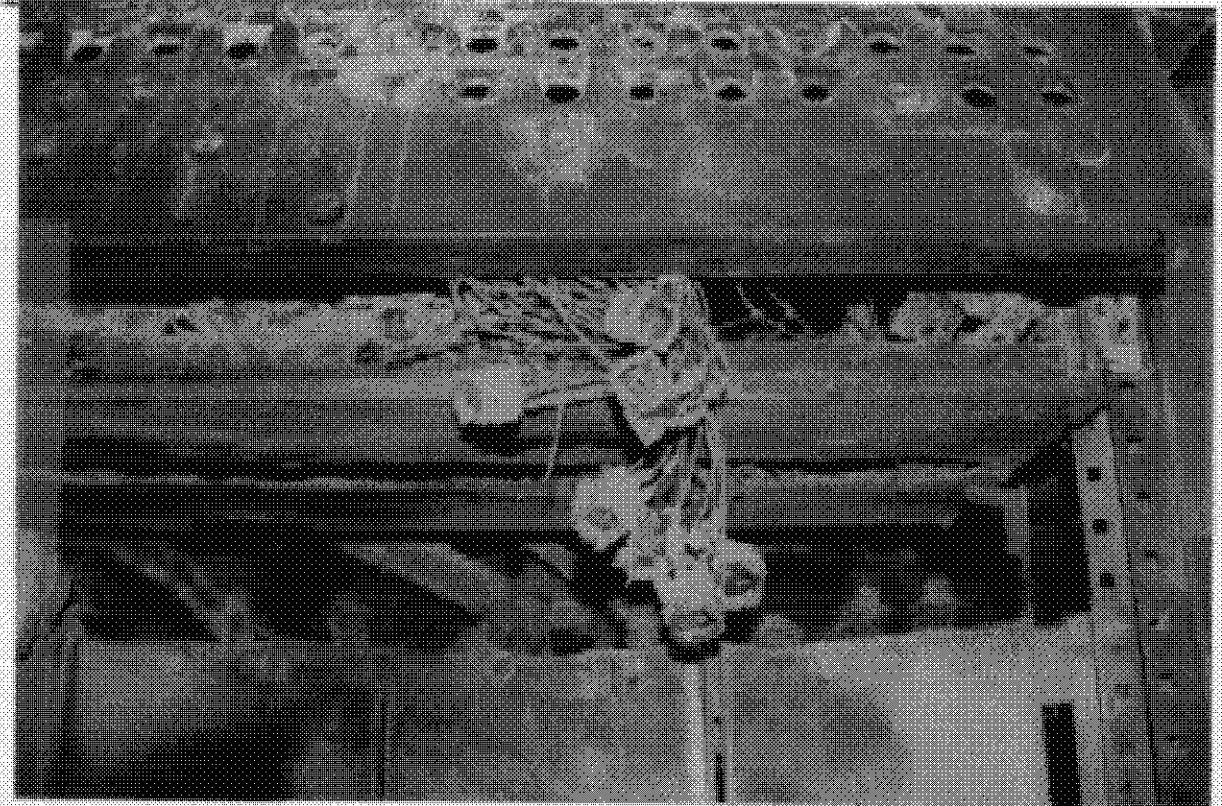
EXPOSURE 11 DEPICTS Inside Rear P-2

EXPOSURE 12 DEPICTS Top Tray of P-2 showing skin damage

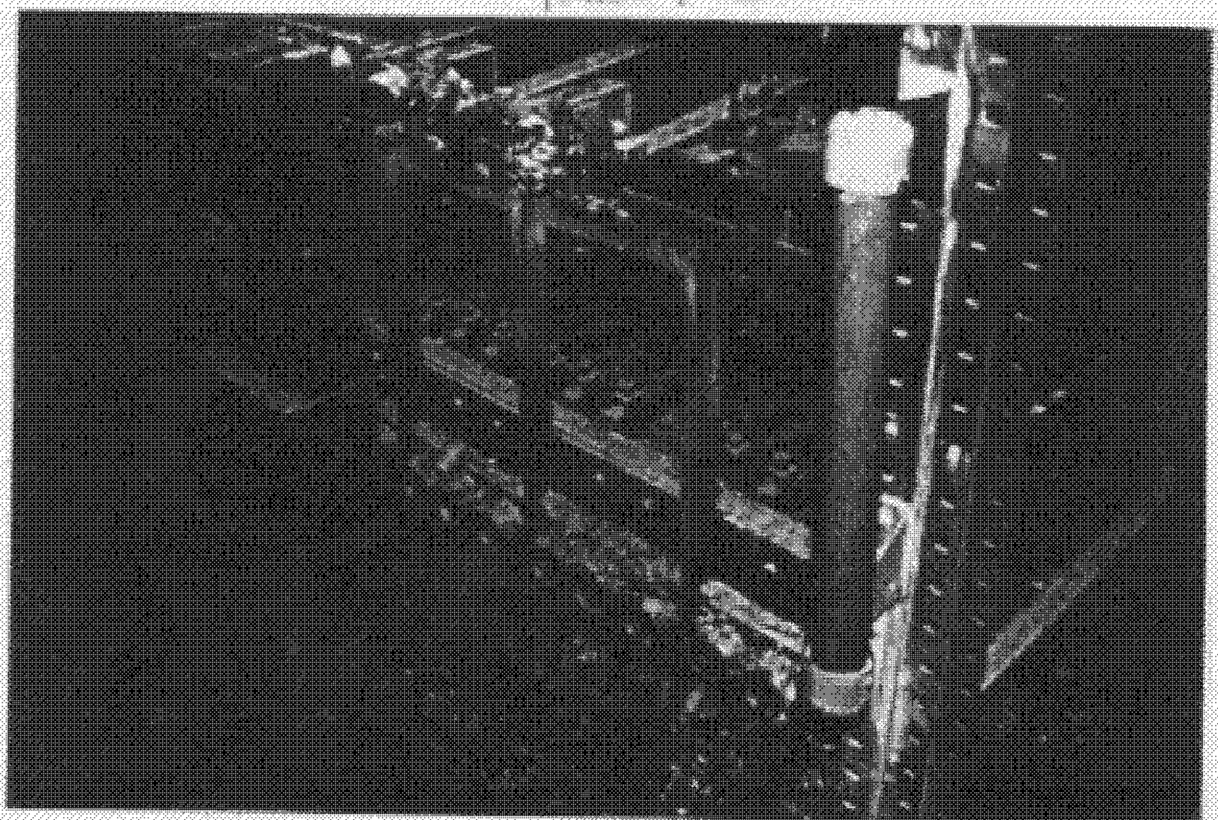
CASE NAME _____ CASE # _____

LOCATION _____ BY _____

ROLL 1



EXPOSURE 16 DEPICTS Top wire tray damage at back of panel P-2



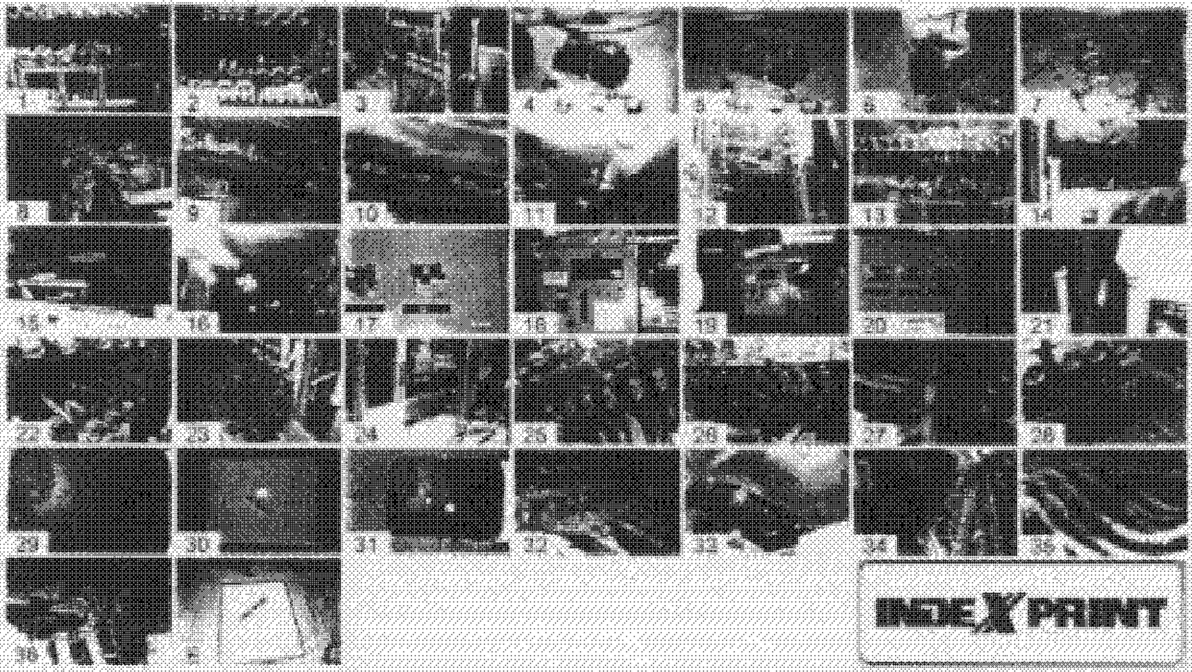
EXPOSURE 19 DEPICTS lower part of P-2

CASE NAME ______________________ CASE # ______________________

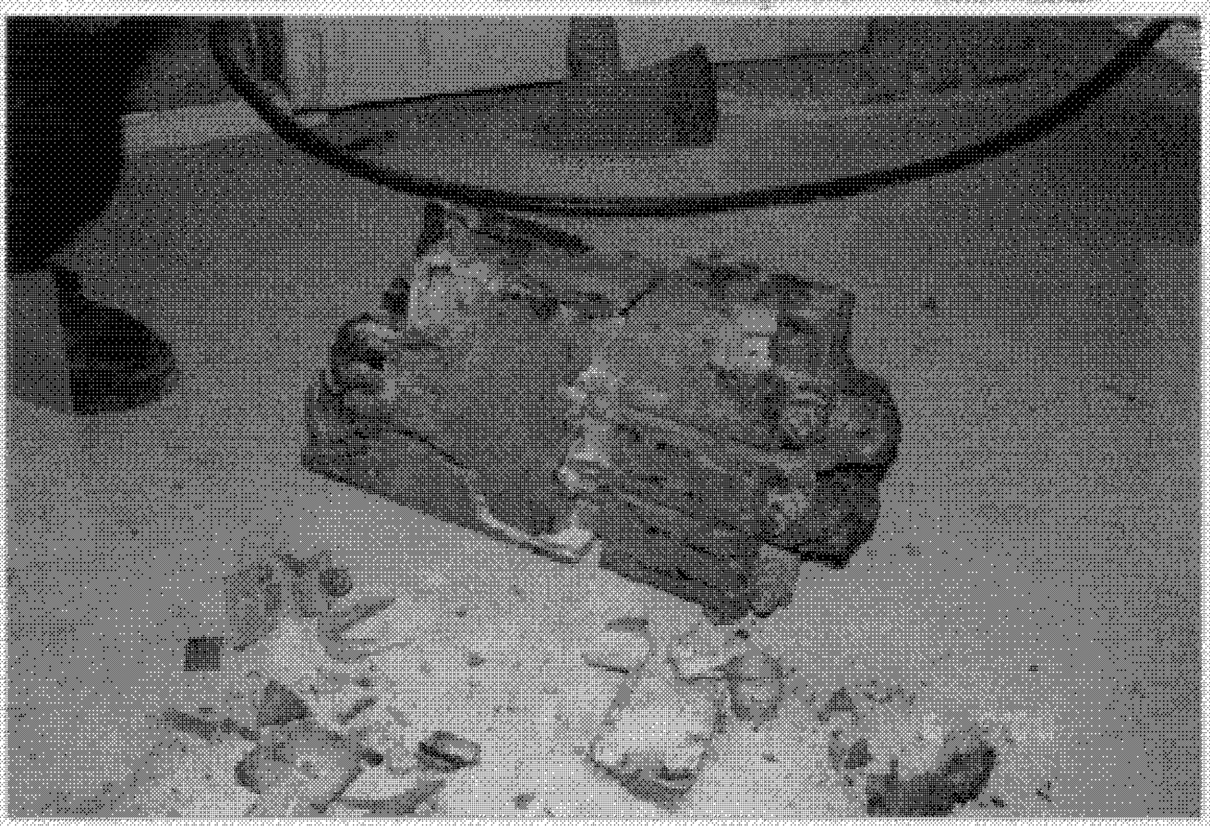
LOCATION ______________________ BY ______________________

ROLL 2

Notes:



EXPOSURE [illegible] DEPICTS Photo #s for Roll # 2

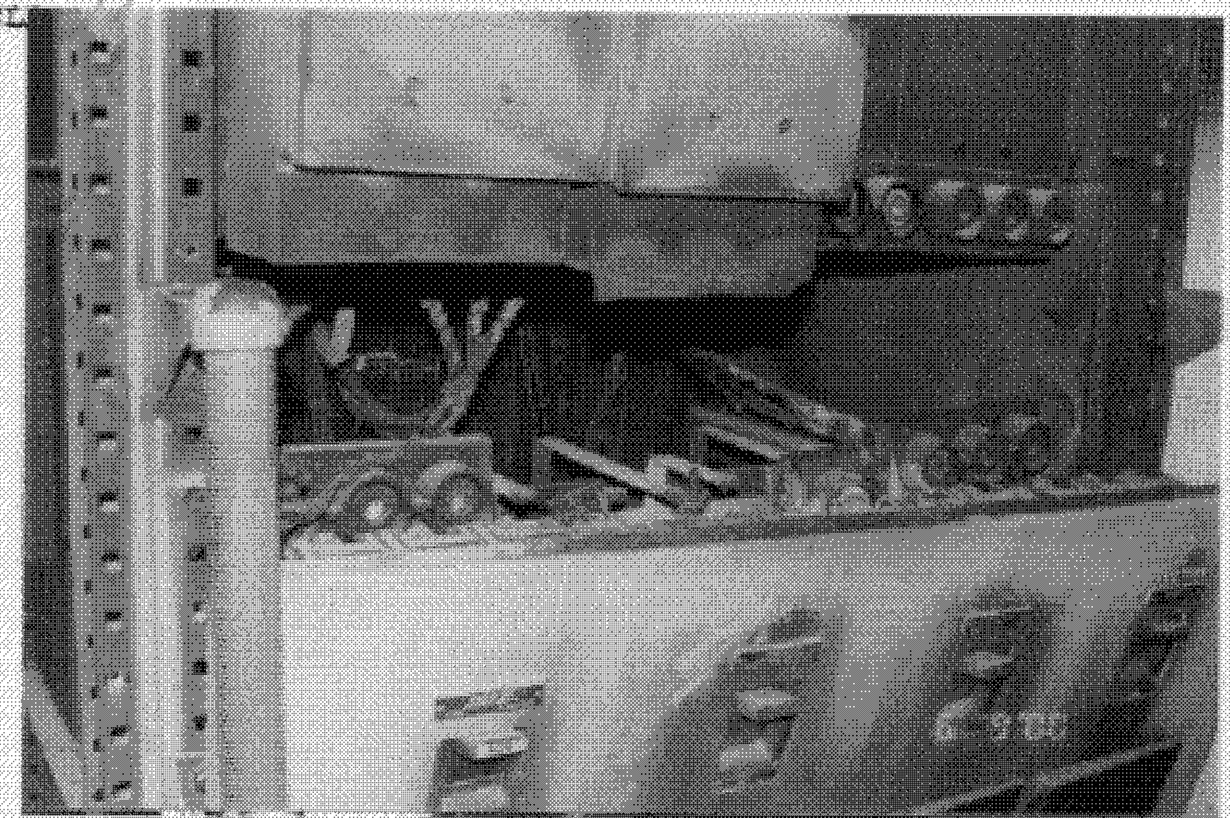


EXPOSURE 5 DEPICTS Breaker as found outside control [illegible]
[illegible]

CASE NAME ____________________ CASE # ____________________

LOCATION ____________________ BY ____________________

ROLL 2



EXPOSURE 14 DEPICTS T&P of ?-1 before brushing removed

4108

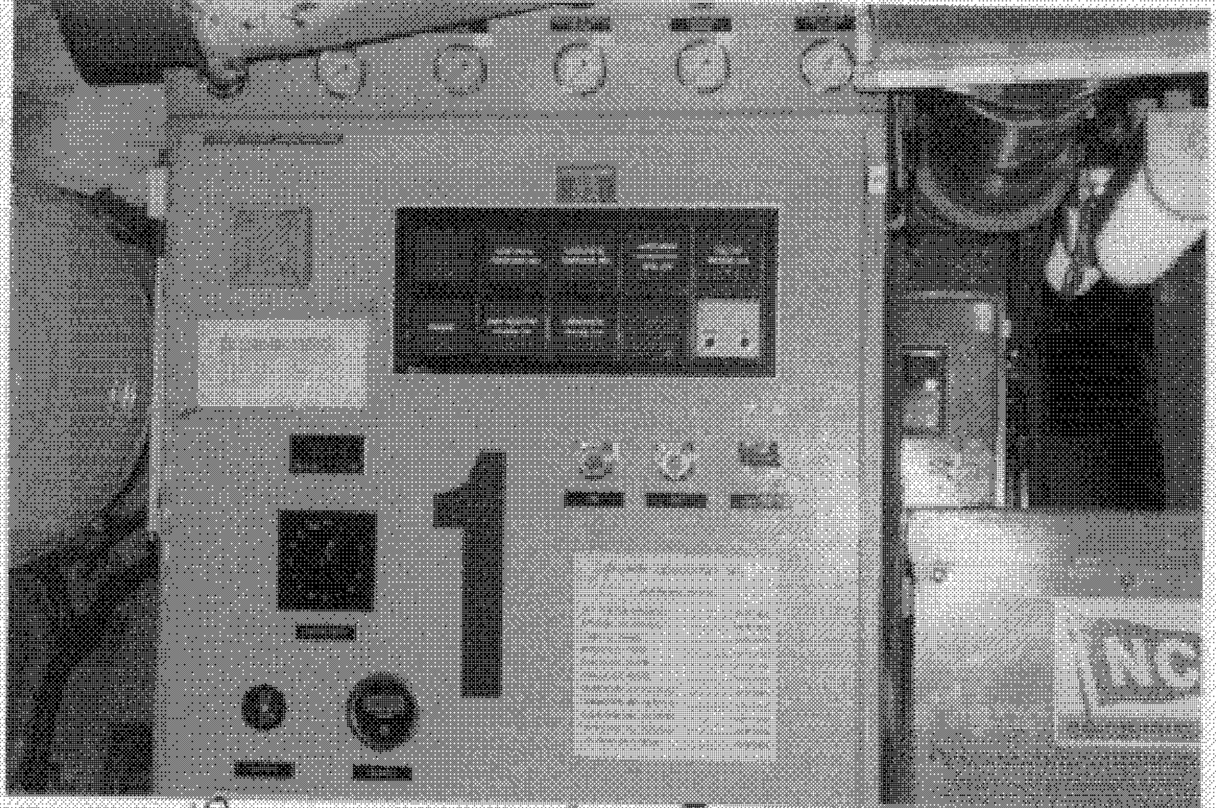
EXPOSURE 15 DEPICTS front plan panel ?-1 — end

CASE NAME ______________ CASE # ______________

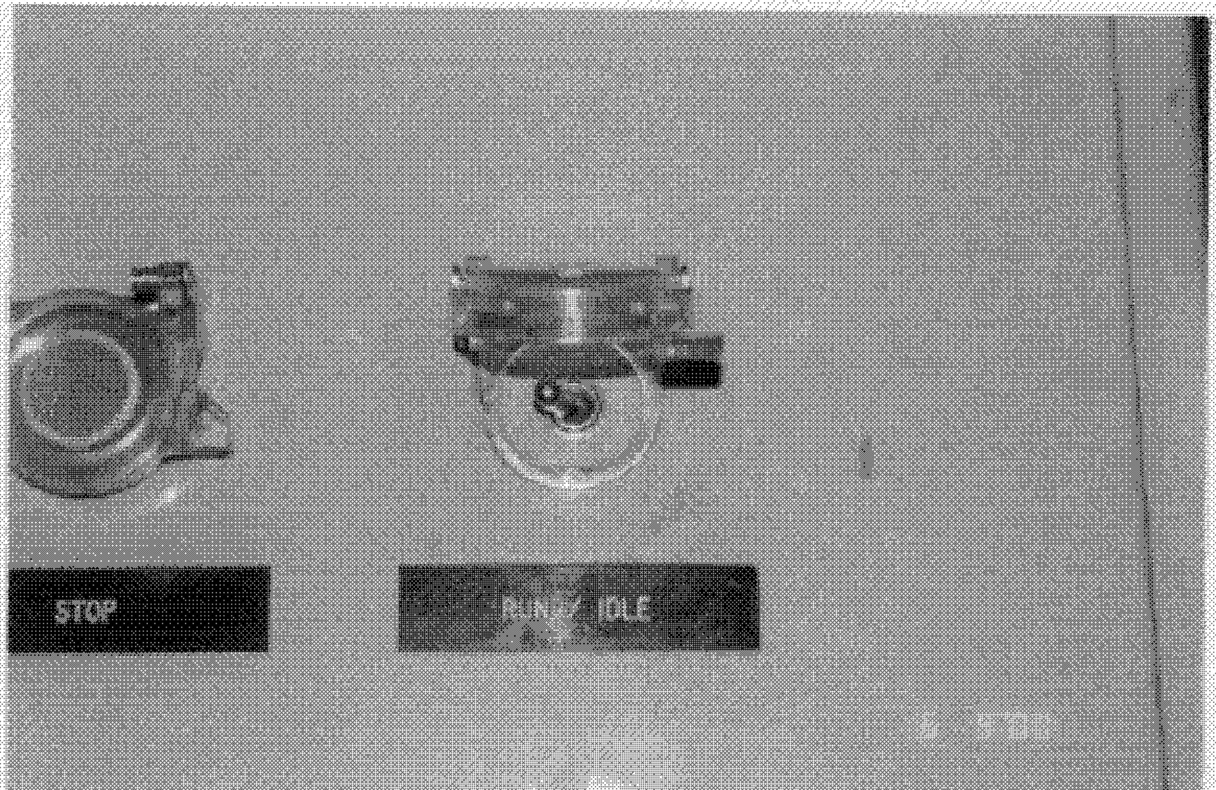
LOCATION ______________ BY ______________

5/18

ROLL 2



EXPOSURE 18 DEPICTS Generator #1 control panel [illegible]



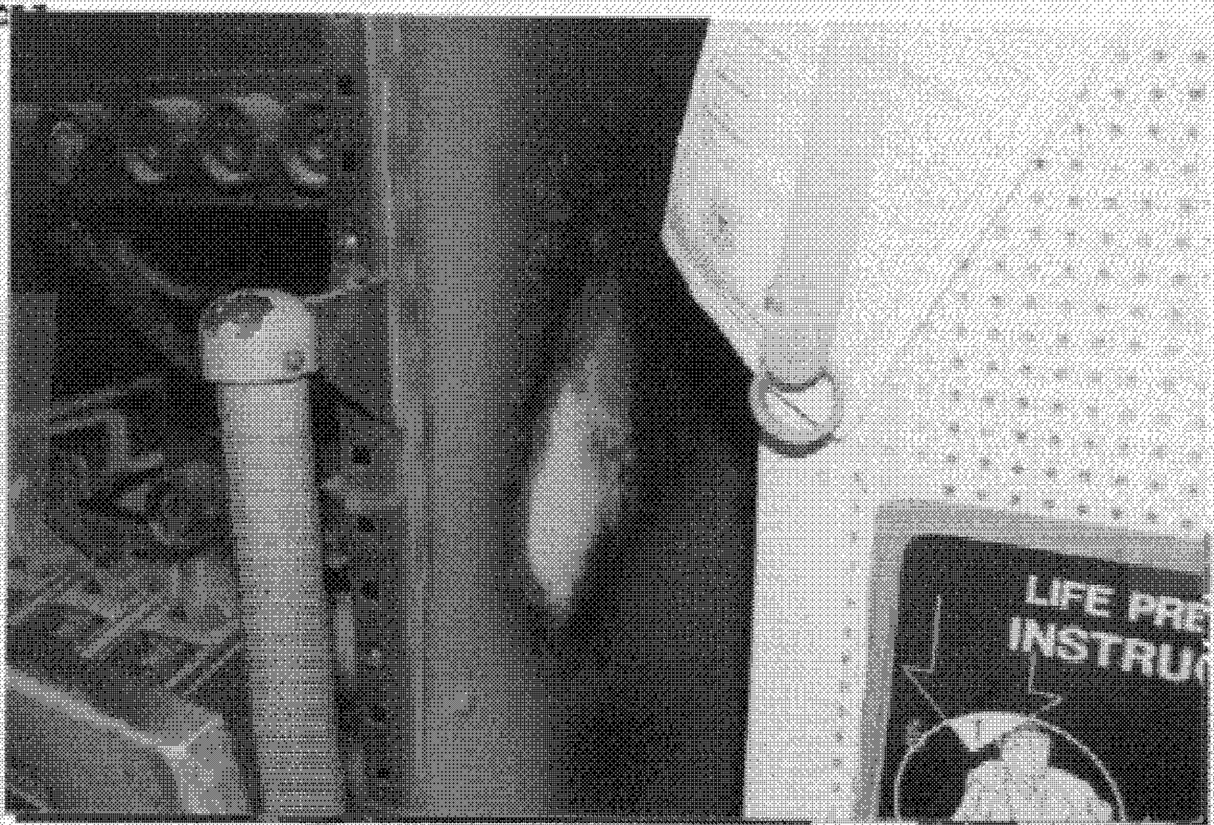
EXPOSURE 17 DEPICTS position of switch on gen #1

CASE NAME ______ CASE # ______

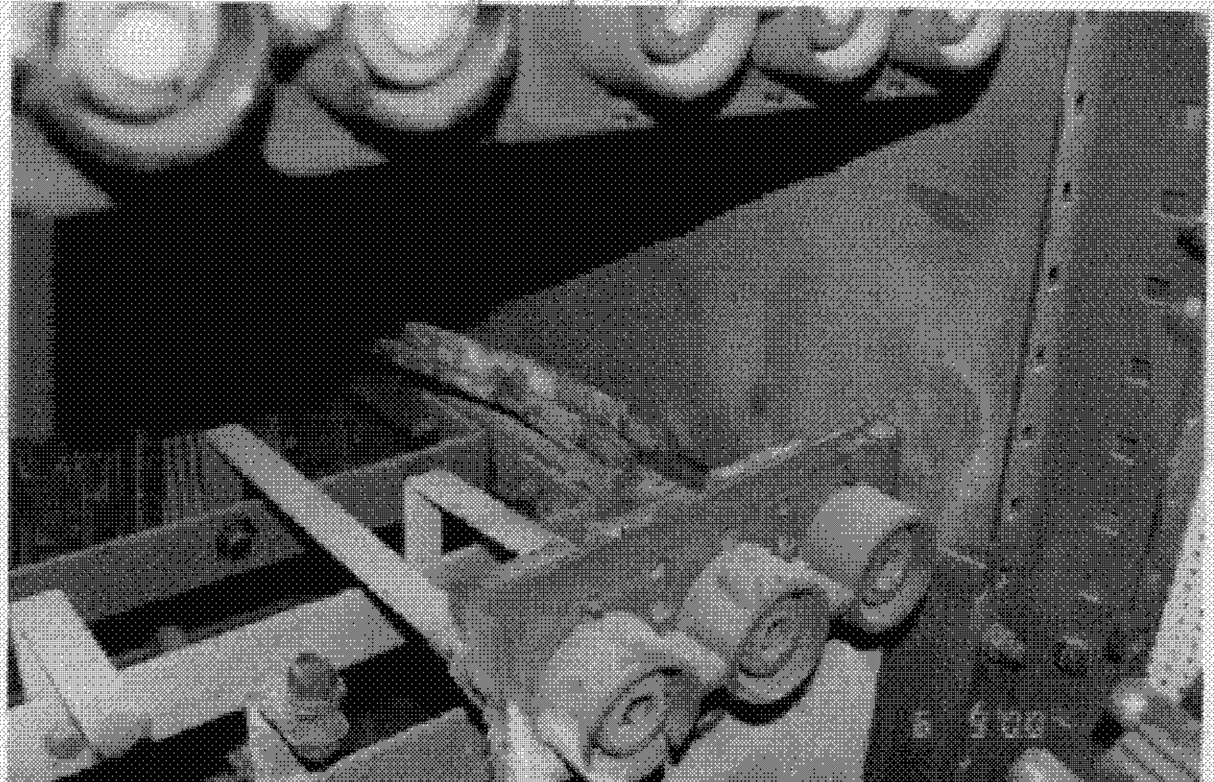
LOCATION ______ BY ______

6

ROLL 2



EXPOSURE 21 DEPICTS P-1 fan cowl extension showing signs of heat

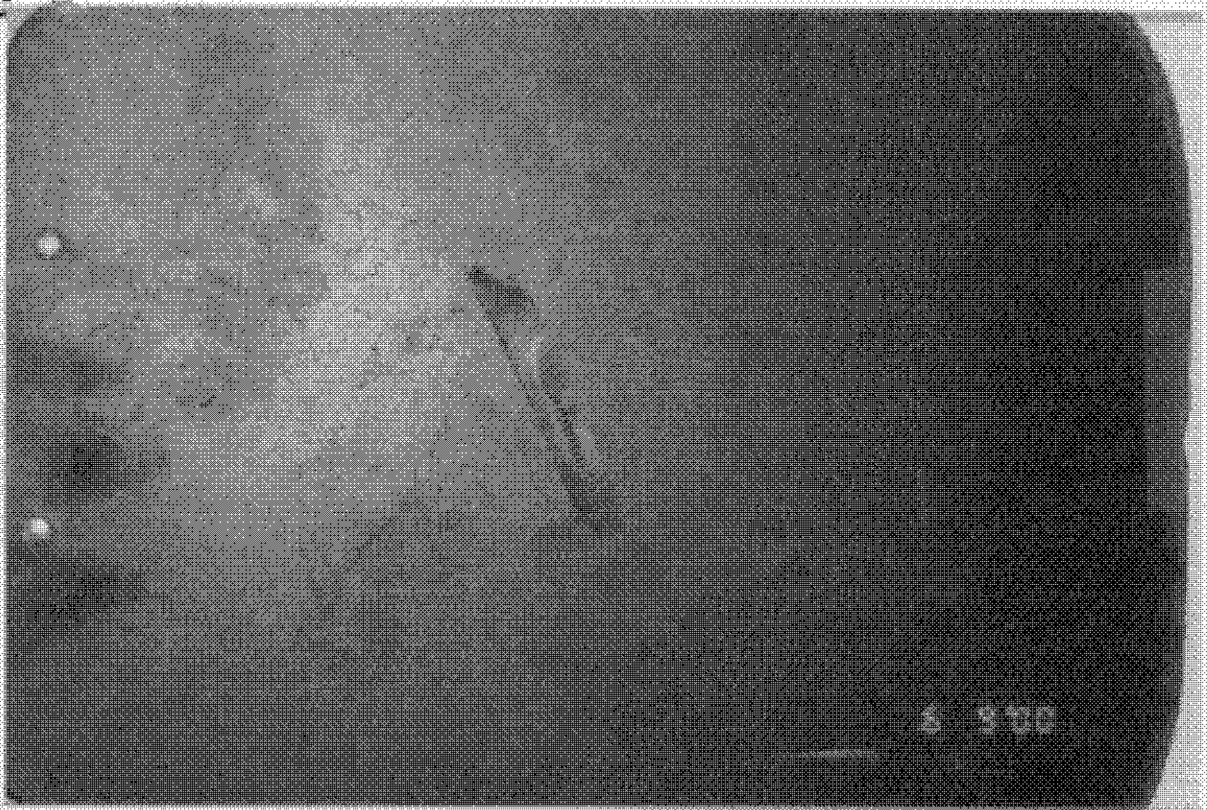


EXPOSURE 22 DEPICTS P-1 inside of above heat mark

CASE NAME ______________ CASE # ______________

LOCATION ______________ BY ______________

ROLL 7



EXPOSURE 29 DEPICTS 1st pc. of bonding found showing signs of arcing both ends

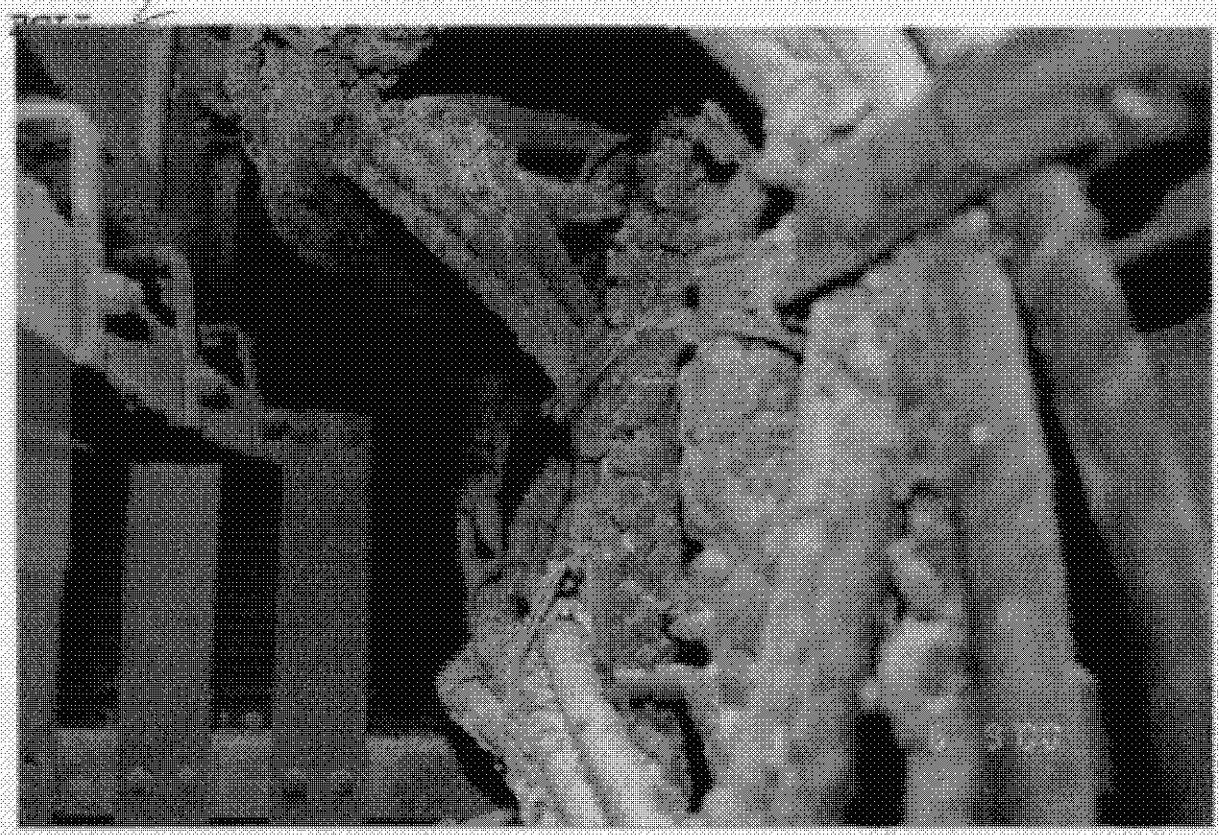
EXPOSURE 31 DEPICTS Same as #29 w/ US quarter for gauge

CASE NAME ______ CASE # ______

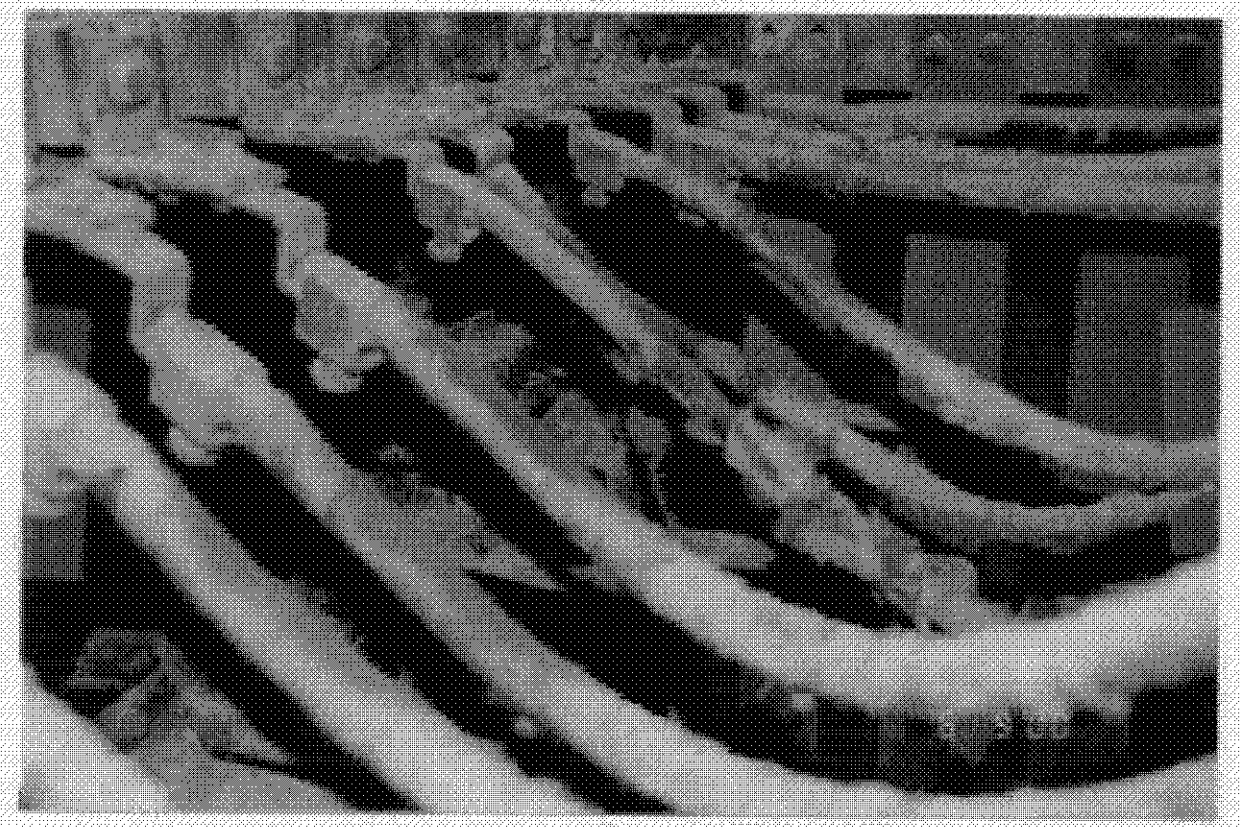
LOCATION ______ BY ______

8/11

PAGE 2



EXPOSURE 34 DEPICTS insulation on cables + loading holding cables
+ bundles

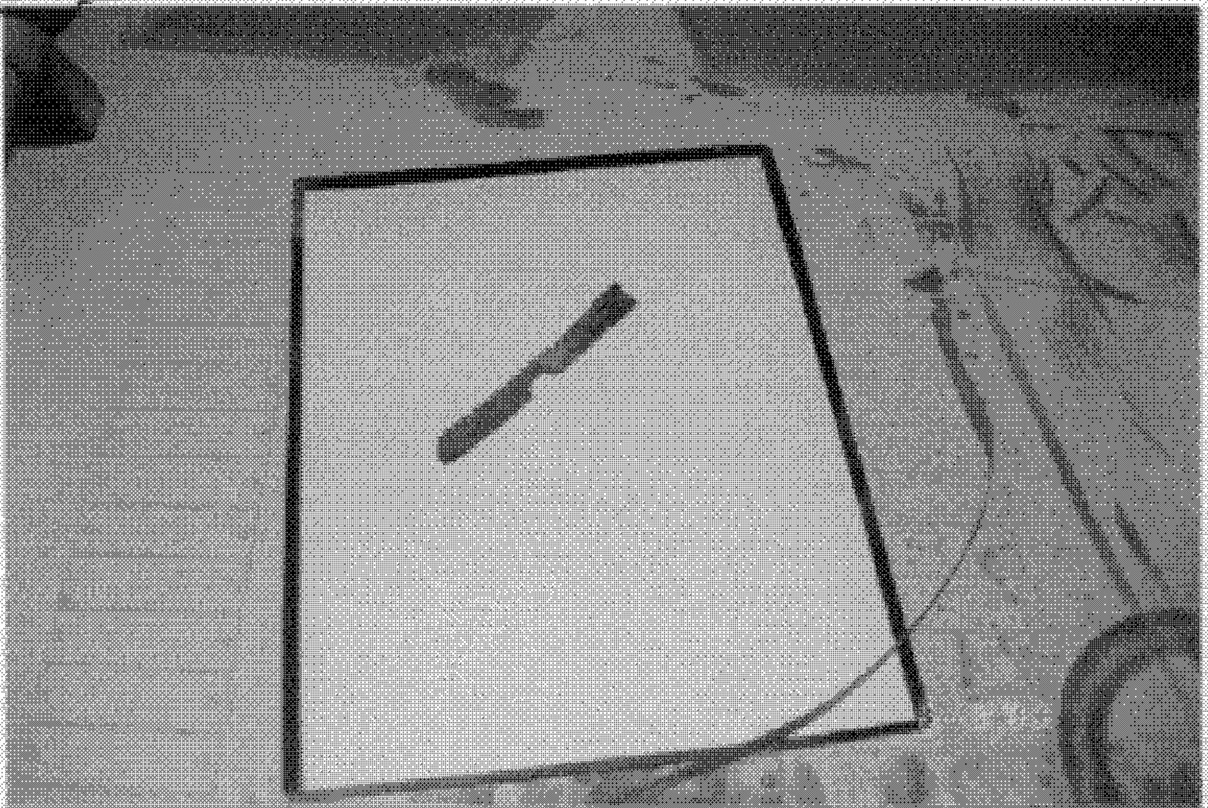


EXPOSURE 35 DEPICTS cables showing damage to insulation

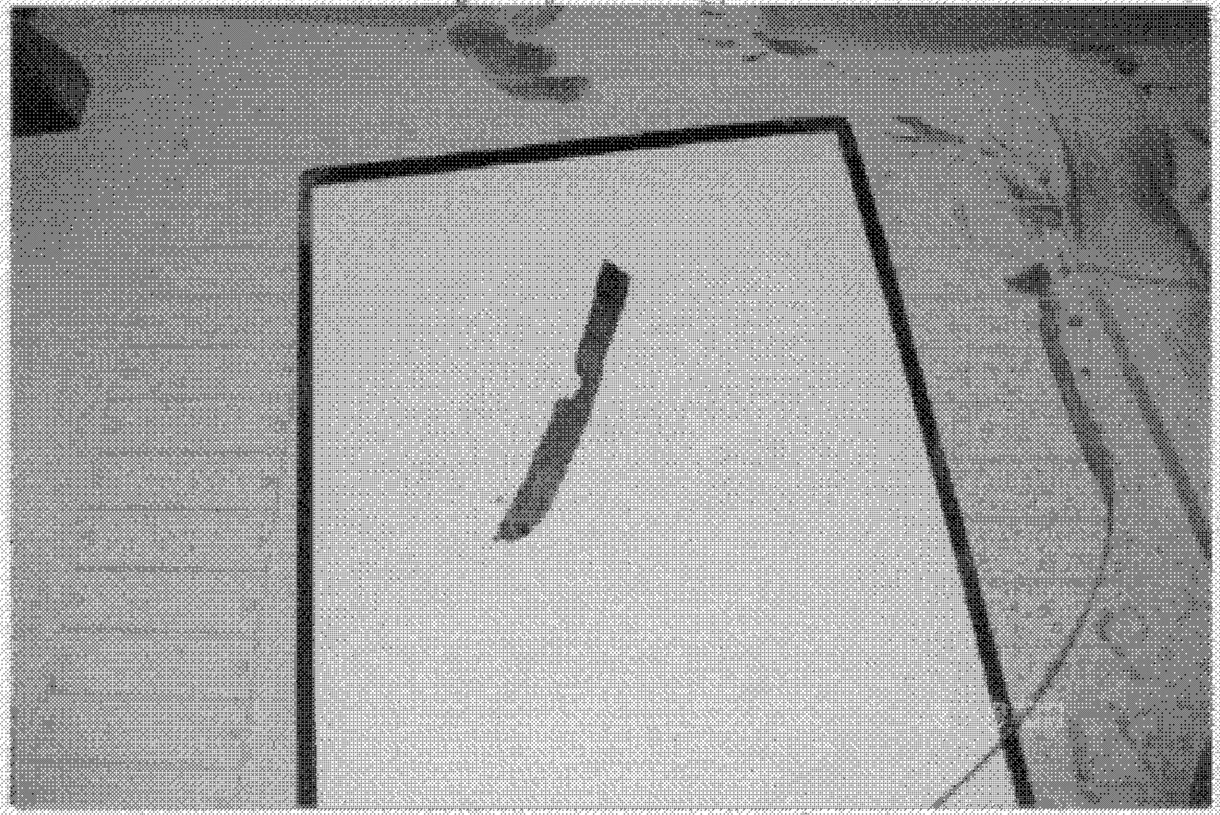
CASE NAME _____ CASE # _____

LOCATION _____ BY _____

ROLL 2



EXPOSURE E (37) DEPICTS another bonding strap showing signs of arcing found mid/rear section of [illegible]



Roll #3

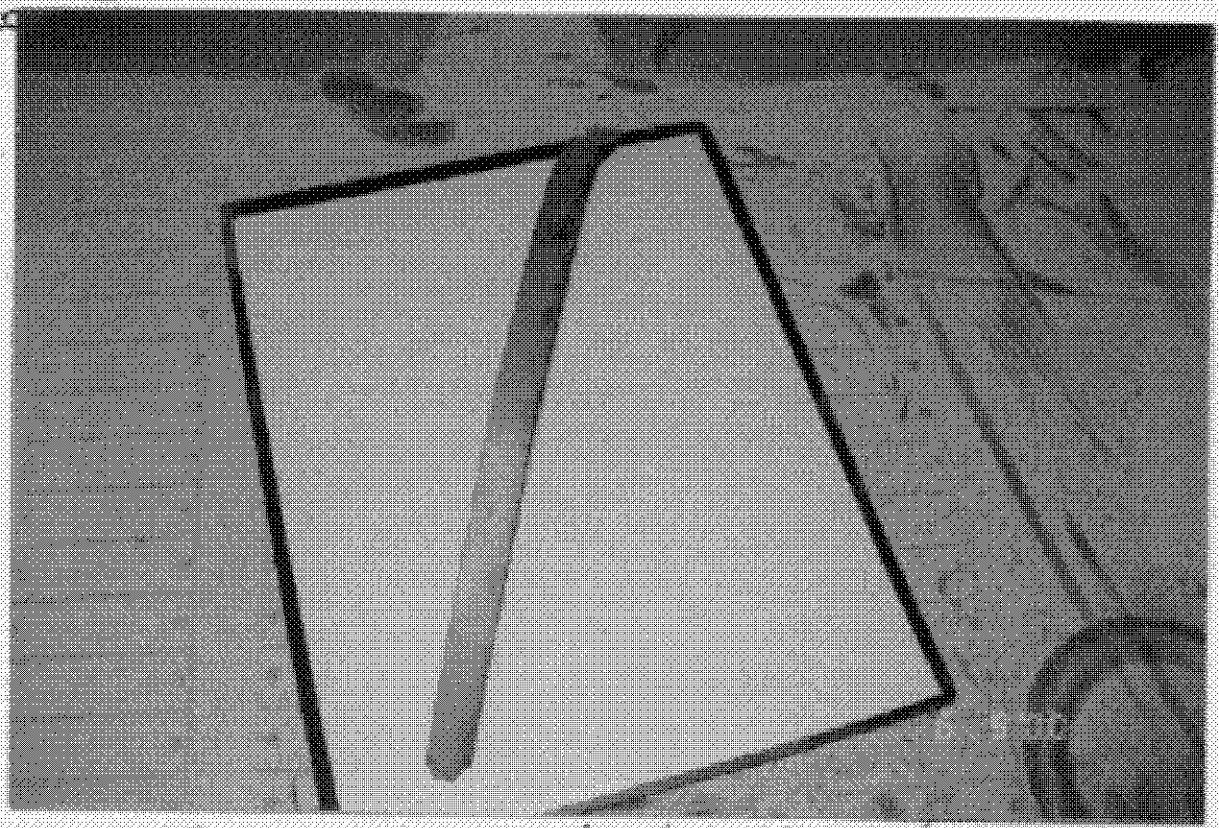
EXPOSURE #2 DEPICTS opposite side of band in above photo

CASE NAME ______ CASE # ______

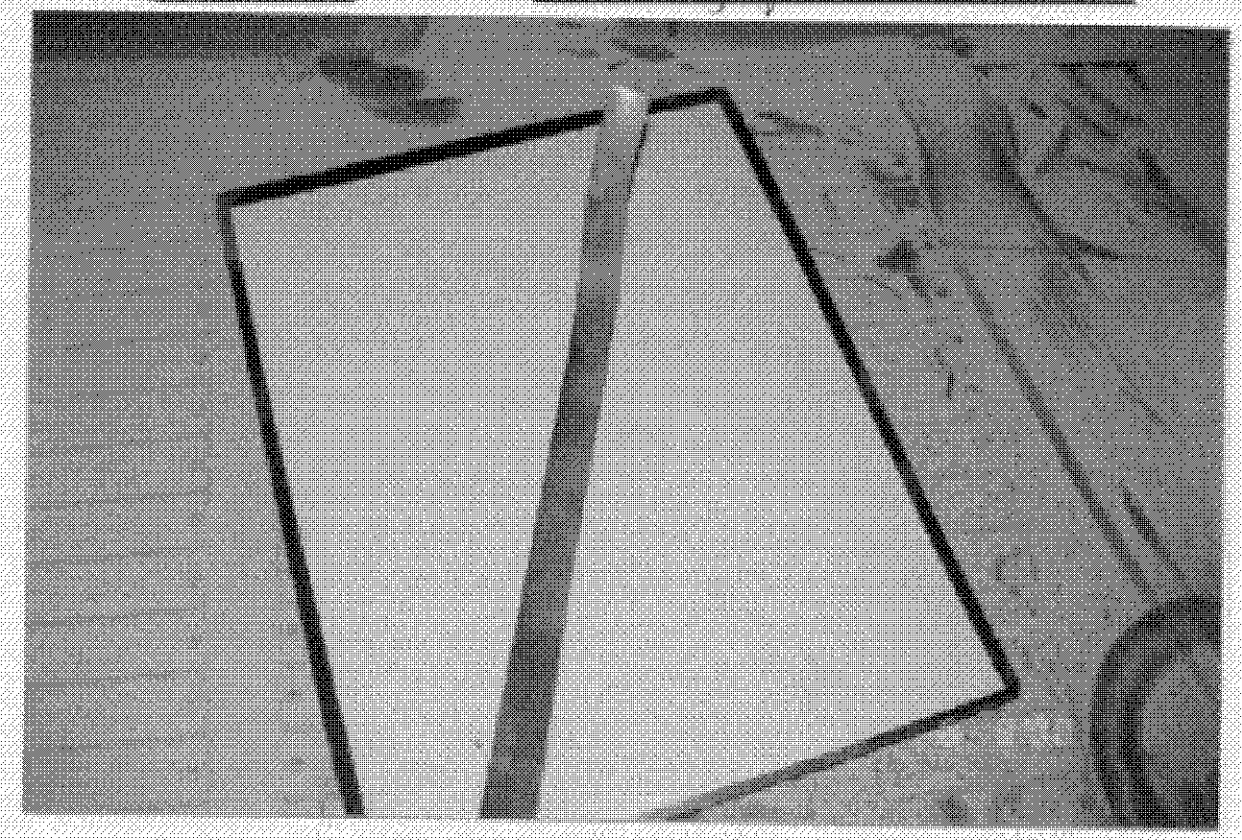
LOCATION ______ BY ______

16/17

9



EXPOSURE 3 DEPICTS Landing ground (P-2 dock) w/ debris



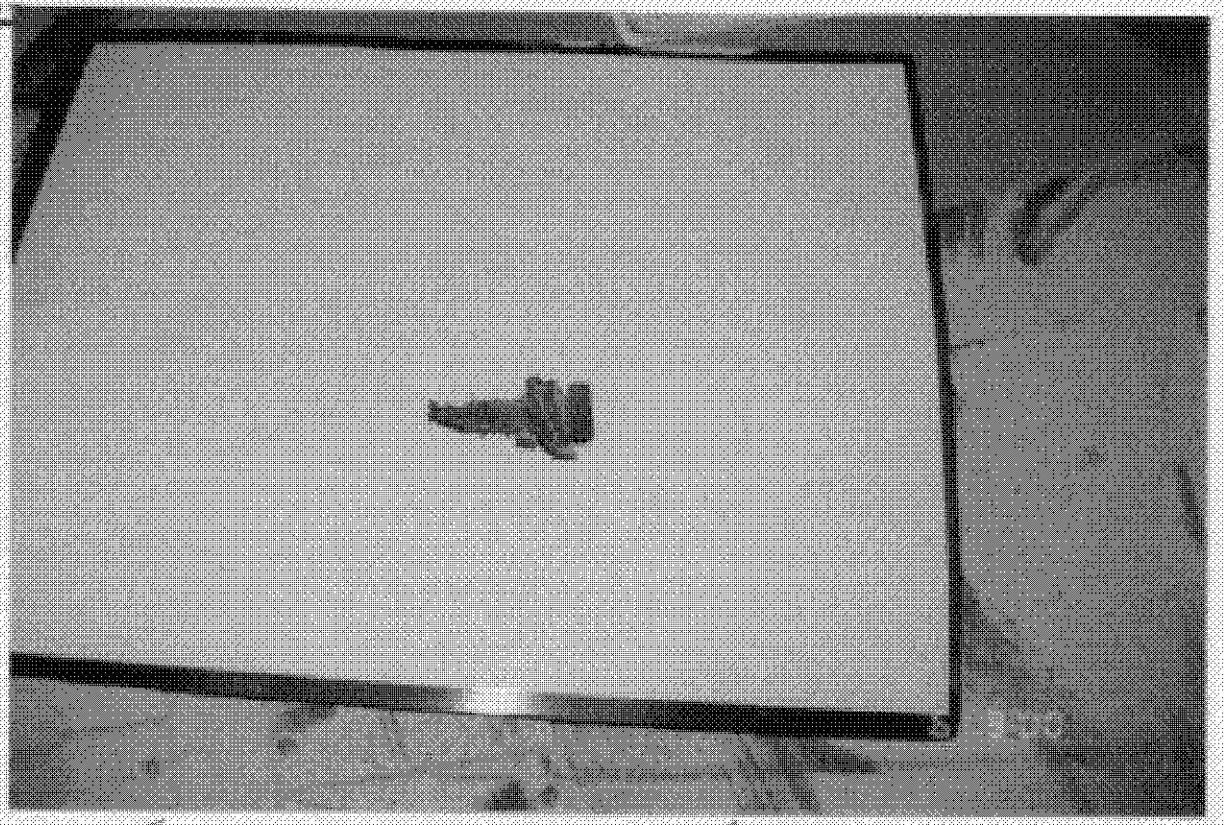
EXPOSURE 4 DEPICTS similar scale of above photo

CASE TAKE _____ CASE # _____

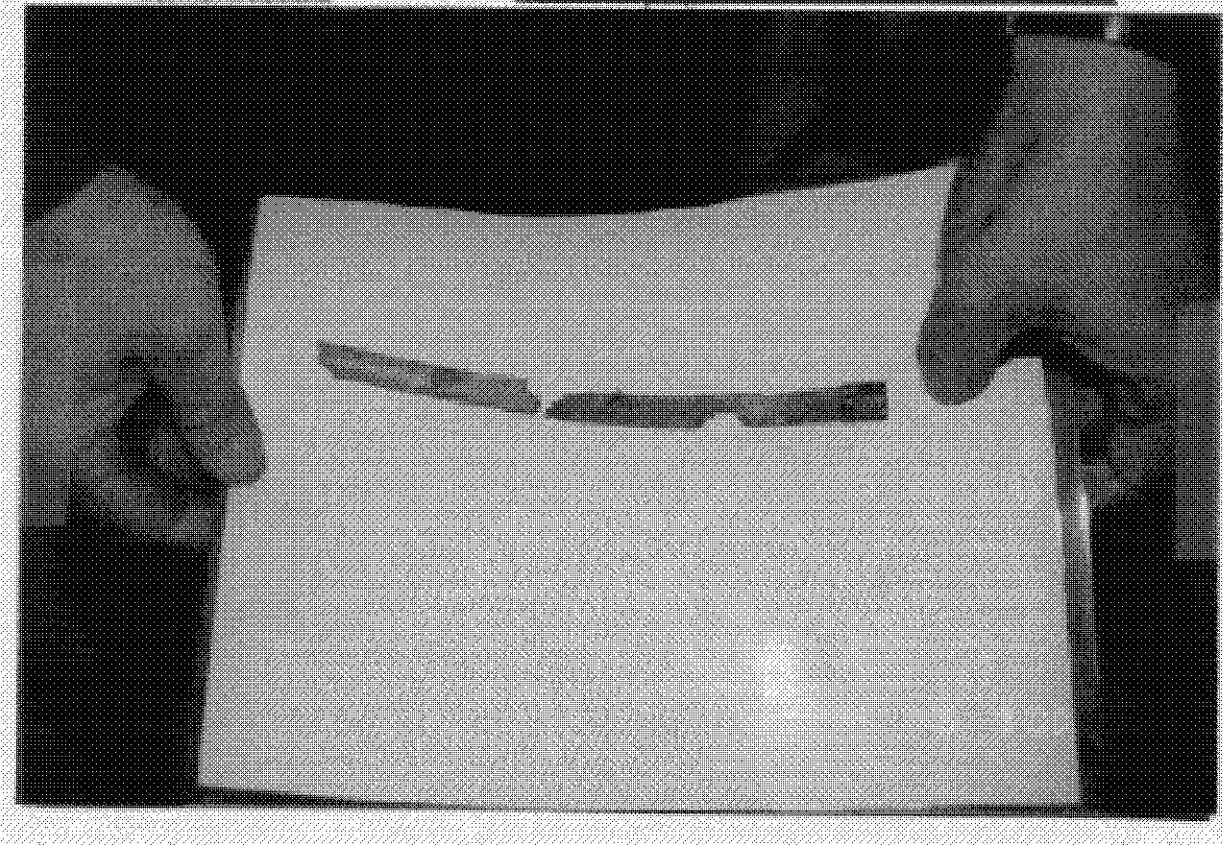
EXPOSED _____ BY _____

3

ROLL



EXPOSURE 5 DEPICTS drawing of knife

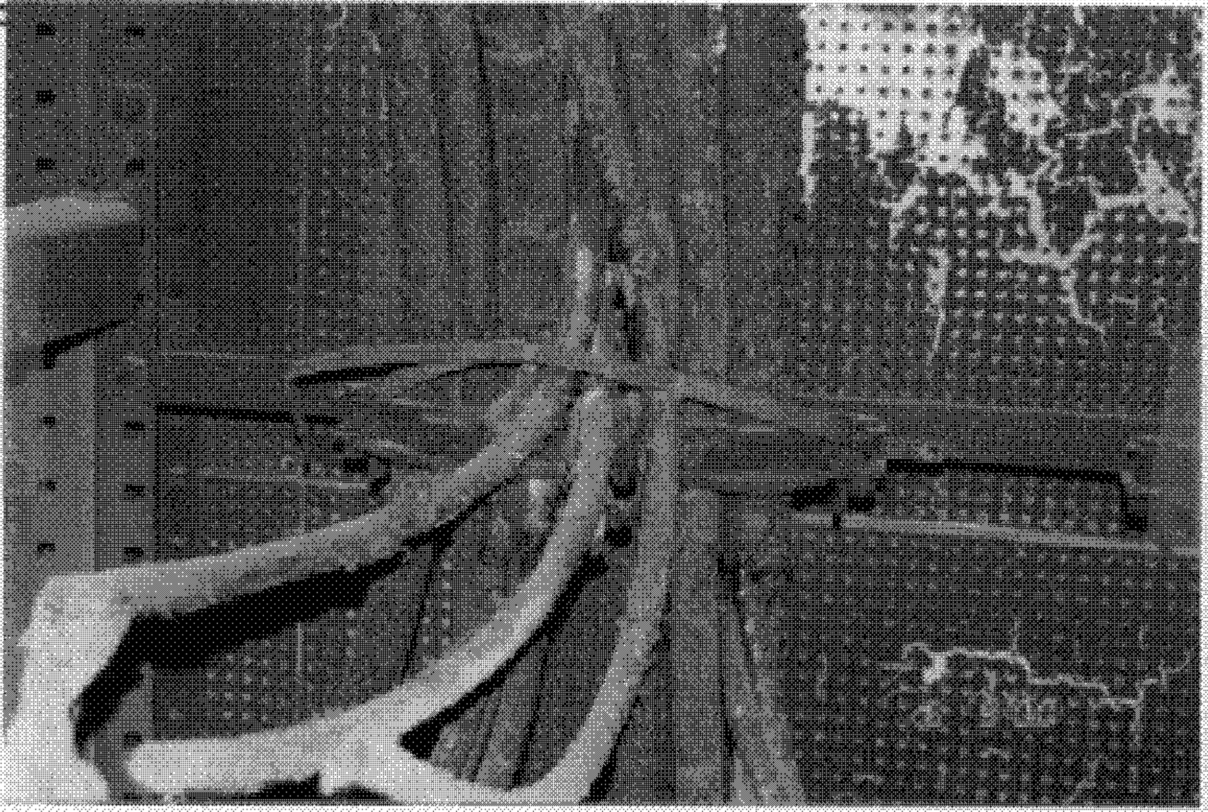


EXPOSURE 8 DEPICTS Possible metal of wood handle

CASE NAME _____ CASE # _____

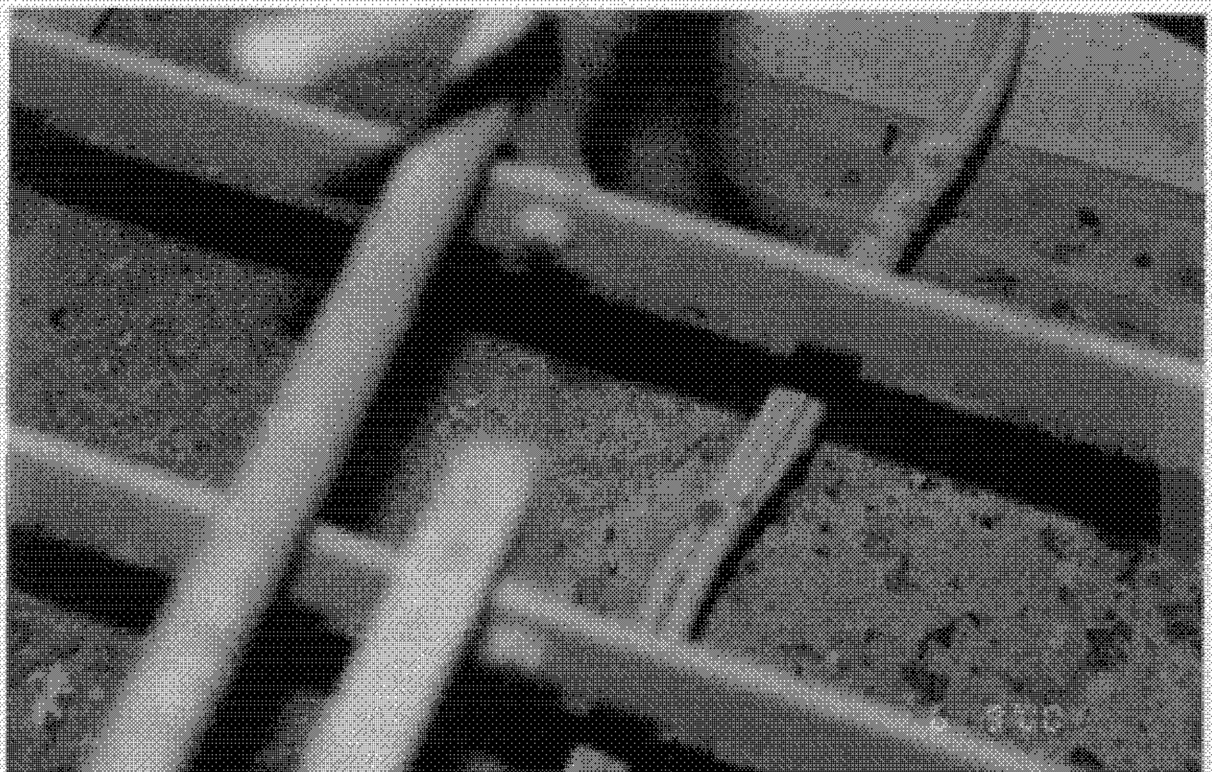
LOCATION _____ BY _____

ROLL 3



EXPOSURE 25 DEPICTS Bonding w/o rubber insulator

#4



EXPOSURE 10A DEPICTS Bonding under panel #1 on deck left [illegible]

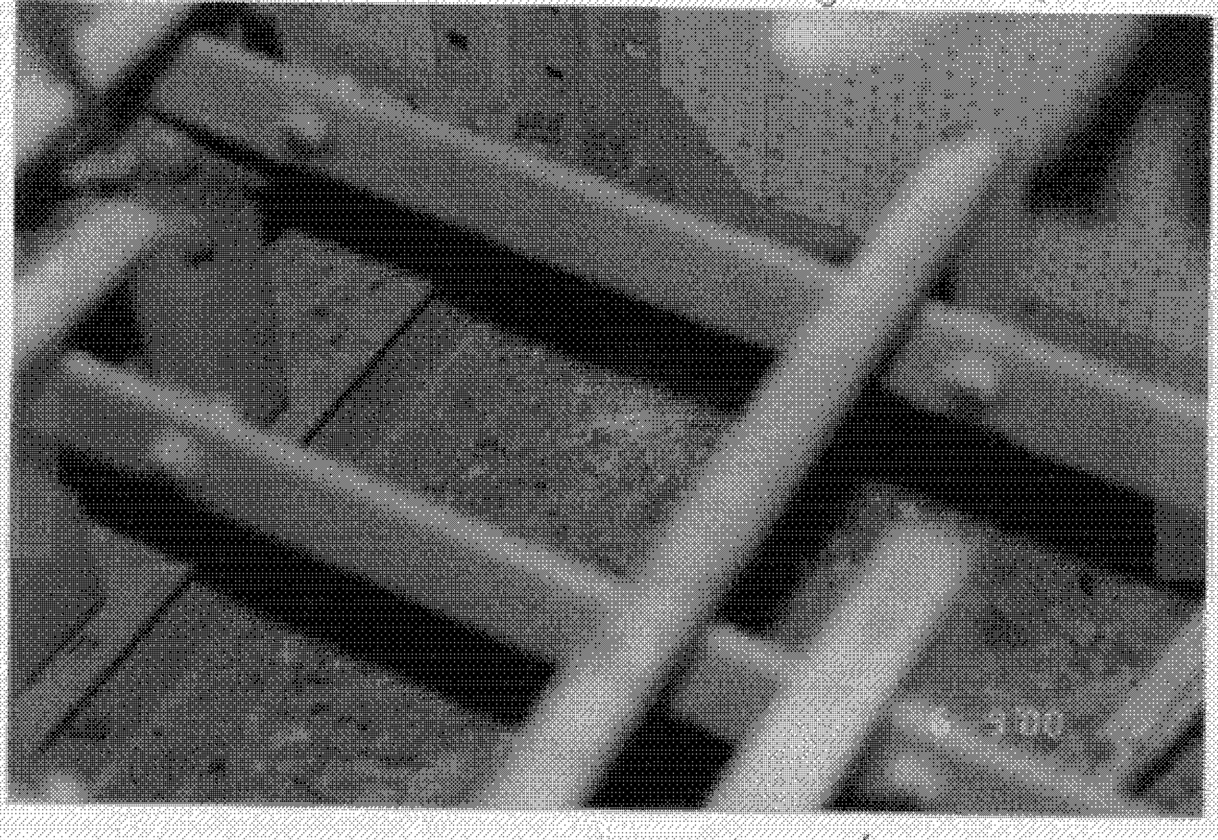
CASE NAME ______________ CASE # ______________

LOCATION ______________ BY ______________

13/21

4

EXPOSURE 11 #A DEPICTS More Bonding on deck panel #, left ...



EXPOSURE 12A DEPICTS Bonding Panel #1

CASE NAME ____________ CASE # ____________

LOCATION ____________ BY ____________

4

ROLL

EXPOSURE D/P DETAILS Bending Proof

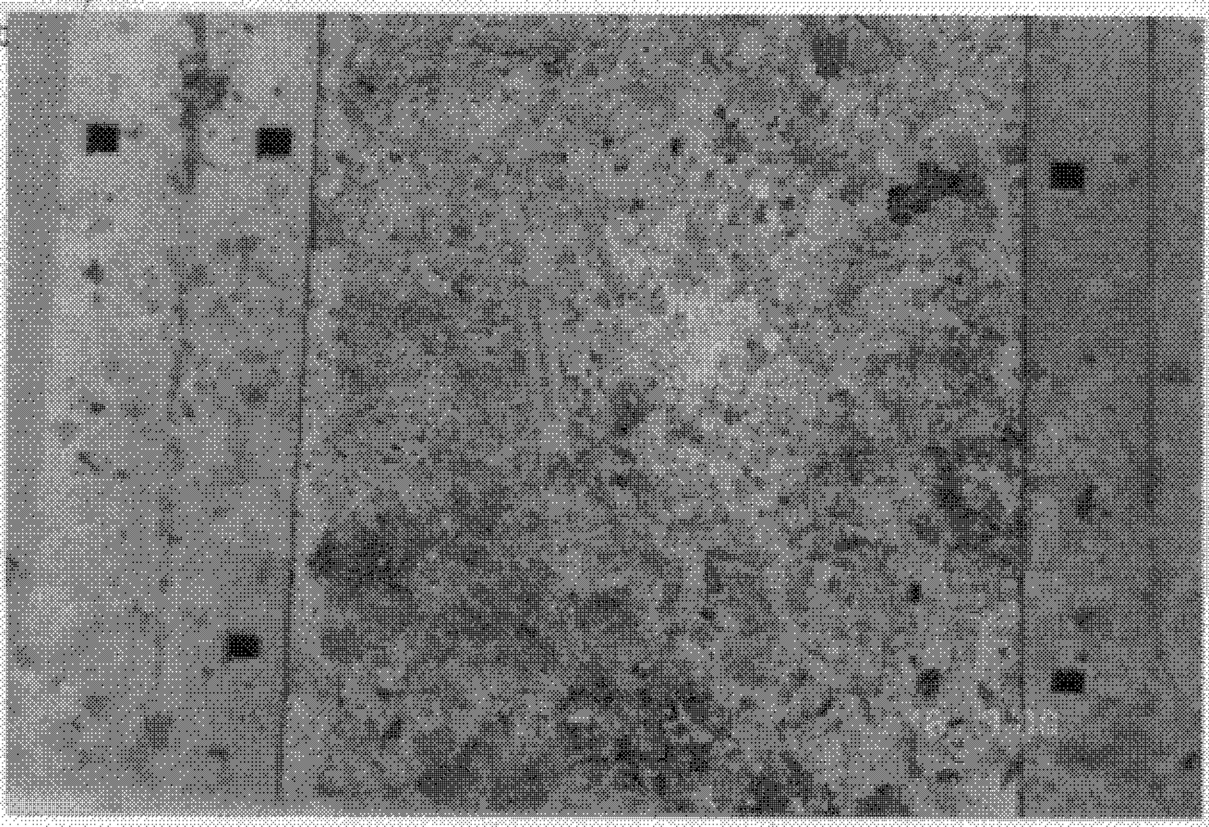
EXPOSURE 14 A DETAILS Bending Proof #1

CASE NAME _____ CASE # _____

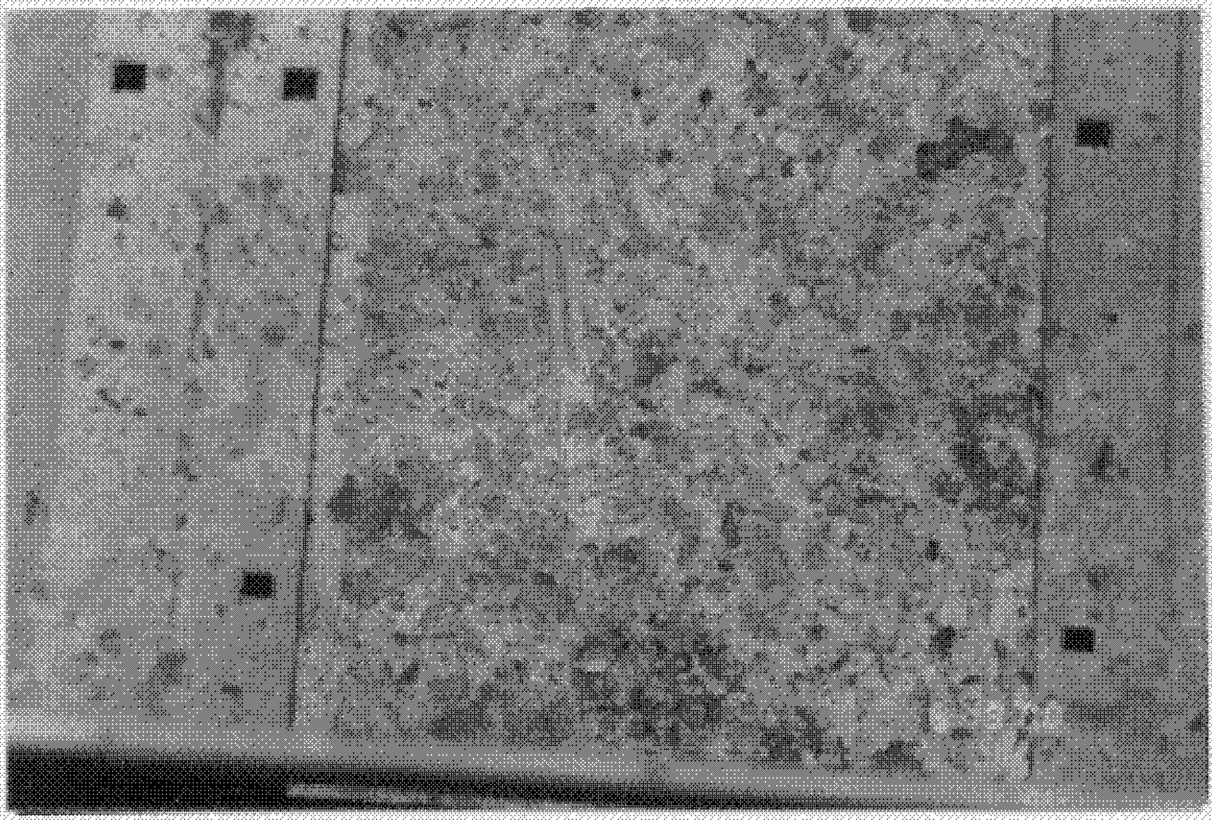
LOCATION _____ BY _____

4

RC



EXPOSURE 15A DEPICTS Bonding of deck between Panels 1 + 2



EXPOSURE 16A DEPICTS Same as 15A

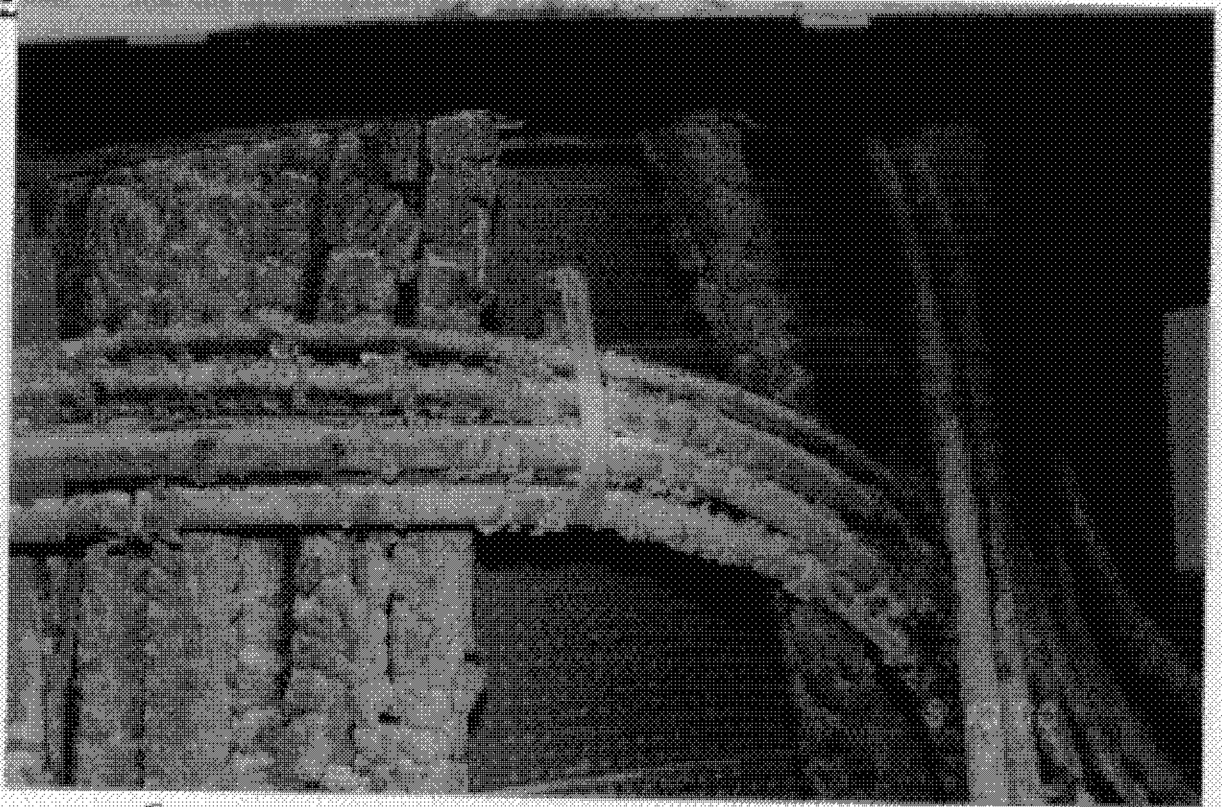
CASE NAME ____________ CASE # ____________

LOCATION ____________ BY ____________

16/1

5

ROLL



EXPOSURE 20A DEPICTS Banding on Cables w/o insulation

EXPOSURE____ DEPICTS____

CASE NAME____ CASE #____

LOCATION____ BY____